BROWNFIELD REGENERATION AND THE PUBLIC UNDERSTANDING OF RISKS TO HEALTH: A SCOPING STUDY

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BACKGROUND

The Government has set ambitious targets for the re-use of 'brownfield' (previously developed) land for building to help reduce the pressure for development on 'greenfield' sites. The Government's current target (Public Service Agreement Target 6) is that at least 60% of new dwellings in England should be provided on previously developed land or by conversion of existing buildings. That target is being attained and, indeed, has been exceeded, with 74% of new housing in 2005 built on brownfield sites. The Government recently agreed with English Partnerships a National Brownfield Strategy which is aimed at further stimulating the redevelopment and re-use of brownfield sites. The increasing re-development of such sites, often for residential development, is taking place not just in the UK (Dixon *et al*, 2007) but in many other countries, for example on waterfronts undergoing regeneration (Bowen, 2007).

The industrial history of North East England means that it has many brownfield sites and there is considerable public and governmental pressure for them to be regenerated and reused. The Regional Spatial Strategy, finalised in July 2008 (DCLG, 2008b) notes that, in 2005-6, 67.8% of new housing in the region was provided on sites that had been previously developed. The Plan set a target of 70% for 2008 and 75% by 2016.

Some brownfield sites are affected by contamination, notably former industrial sites where there are chemical residues or other pollutants. Such contamination adds to the cost of re-use, but developers need to utilise sites where there is contamination in

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order to work within targets for brownfield development. Rapid increases in land values over recent years have meant that 'even grossly contaminated sites costing many millions of pounds to remediate can be seen to be economically viable to redevelop' (Russell *et al*, 2008).

Where land has been designated as Contaminated under Part IIA of the Environmental Protection Act 1990, the relevant local authority is obliged to establish responsibilities for the contaminated land and to ensure that remediation takes place.

The re-use of contaminated land involves potential risks to public health. Remediation and site management are intended to minimize these risks. However, these actions do not always allay public concerns about potential risks (McCarron *et al*, 2000).

Previous experience in the public health field suggests that conventional public information campaigns are not always effective in addressing public anxieties, and that consultative and deliberative forms of public engagement may offer more effective responses to public concern.

AIMS AND OBJECTIVES OF THE STUDY

Aim

- To scope the nature, extent and effectiveness of public and stakeholder consultation upon the principal public health issues arising from the redevelopment of brownfield land in the North East.

Objectives

- To assess the extent of brownfield and contaminated sites in the North East region and the level of previously expressed public concern about their re-use.
- To investigate the sources of, and nature of, any public concern.
- To examine, using case studies, how such concerns have been addressed by relevant agencies.
- To produce a proposal for a more extensive study leading, if appropriate, to the development of an evidence-based guidance document for stakeholders.
- Given the potential sensitivity of the public health issues associated with the re-use of contaminated land, to ensure that the research does not itself exacerbate public anxiety.

STAGES OF THE RESEARCH

Three stages are covered in this paper. As this is a scoping study, the intention is subsequently to lead to a further programme of research. It is envisaged that the research will ultimately comprise four stages. Durham University's Partnership Venture Fund supported stages 1 to 3. One outcome of the PVF research may be the preparation of a research proposal for a fourth stage and the identification of appropriate sources of further funding.

Stage 1: Regional assessment of the scale and nature of brownfield regeneration

a) Brief overview of the legal and regulatory framework relating to the re-use of contaminated sites, including particular reference to the roles of Local Authorities, Primary Care Trusts and the Health Protection Agency (HPA).

b) Initial desk research using internet and documentary sources and existing databases, including the National Land Use Database and Local Authority records.

c) Interviews with at least 10 key informants in stakeholder organisations, including selected regional bodies, Local Authorities and the HPA.

d) Compilation of a written overview (based on existing sources and information from interviews) of the extent and status of brownfield and contaminated land in the North East and of progress in the region towards the implementation of the contaminated land regime introduced on 1 April 2000 under Part IIA of the Environmental Protection Act 1990.

Stage 2: Case studies of sites involving public concern

e) Identification and examination of case studies where the re-use of contaminated land may have provoked public concern. Case studies to be identified and examined on the basis of:

   (i) Analyses of local print and on-line media, including news reports, opinion columns and letters to the editor to identify cases; and

   (ii) Interviews with relevant stakeholders, e.g. Local Authority officers, property development companies, HPA staff.

f) Production of a written report outlining three contrasting case studies in terms of:

   (i) The nature, causes and level of public concern, if any. (e.g. is it related to suspected contamination or to other factors?)

(ii) How has concern been expressed and with what effects?

(iii) Which public and community organisations (if any) have been mobilised in support?

(iv) The response of statutory bodies, local authorities, landowners, regeneration agencies, property developers and the HPA.

Stage 3: Consider options and priorities for further research

g) Based on the evidence gathered in stages 1 and 2, look at the possibilities for further research to assess the effectiveness of different approaches to addressing public concern over perceived health risks associated with the re-use of contaminated sites.

CONTAMINATED SITES: THE LEGAL AND REGULATORY FRAMEWORK

Definition

Under Part IIA of the Environmental Protection Act 1990, the statutory definition of contaminated land is land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

- significant harm is being caused or there is a significant possibility of such harm being caused; or
- pollution of controlled waters is being, or is likely to be caused

Statutory guidance has been issued concerning this definition. Part IIA was extended to include radioactivity in 2006 and 2007 (but with some exclusions, including natural background radioactivity such as radon gas).

The term 'harm' is used to describe damage to any of the following 'receptors':

- human beings
- ecological systems or living organisms which form part of such systems
- property in the form of crops, produce, livestock, owned or domesticated animals and wild animals which are the subject of shooting or fishing rights, and
- property – buildings.

The process of identifying contaminated land evidently has both technical and social dimensions. For a site to be determined as contaminated under Part IIA, it is not just a matter of contaminants being present, but there also has to be risk of causing 'significant harm' or the 'significant possibility of harm' because of the presence of pathways and receptors. As Catney *et al.* (2007, p40) note, 'arguments over "significance" may relate as much to what may be done to the site as to any contamination of it'. They argue that risk is a 'fluid, contested concept… risk management is as much a social and political process as it is a technical, scientific one' (2007, p41).

There is also EU legislation on contaminated land, including a new EU Directive, 2004/35/CE, on environmental liability with regard to the prevention and remedying of environmental damage, which came into force in April 2007, and covers new land contamination. The European Commission has also proposed a Soil Thematic Strategy to tackle land contamination.

Identification of brownfield and contaminated land

Brownfield land

The National Land Use Database of Previously Developed Land and Buildings (NLUD-PDL)[1] provides an inventory of the national stock of vacant and/or derelict land and buildings; and land and buildings in use either with planning consent/allocated or with potential for redevelopment. It is the only countrywide (England) source of statistical information on brownfield land. It is based on annual returns from Local Authorities.

The NLUD-PDL survey for 2006 identified a total of 26,100 previously developed/brownfield sites, containing 52,670ha of land. Of that, 29,361ha (56%) was vacant and/or derelict, and 23,308ha (44%) was in use. The amount of vacant/derelict land has been decreasing in recent years. The greatest concentrations of vacant/derelict land are in the former industrial towns and cities of the Midlands and northern England, and especially in the most deprived areas.

English Partnerships notes that about a quarter of the total of previously developed (brownfield) land is 'hardcore', having lain dormant or derelict for 10 years or more (English Partnerships, 2003).

[1] Available at www.englishpartnerships.co.uk/nlud.htm

Contaminated land

Under the provisions of Part IIA of the Environmental Protection Act 1990, Local Authorities are required to identify contaminated land in their area. These provisions came into effect in April 2000. The statutory definition of contamination is provided in Section 78A(2) of the Environmental Protection Act 1990, as amended by the Environment Act 1995.

Local Authorities have to have a *written strategy* for identifying contaminated land. They are expected to be proactive in identifying these sites and may invite the public and others to help them do that. Following the introduction of this requirement in 2000, Local Authorities were expected to produce their strategies by July 2001. All have done so.

Sites are recorded on the *Contaminated Land Register* held by the Local Authority. These public registers contain information about regulatory action on contaminated land, and record remediation notices and statements. The register records only information about land which has been *formally identified as contaminated land*, and the action which has been taken to remediate it. The register does not list sites which may or may not be contaminated. Once a site is placed on the Register it stays there permanently – even after it has been remediated. This is justified on the basis that appropriate action could be taken later, for example if proposals are made to change the use of that land.

Responsibilities for remediation

Local Authorities have prime responsibility for identifying contaminated sites and promoting actions to secure its remediation. However, in certain cases, contaminated land will be designated as a 'special site' and the Environment Agency, not the Local Authority, is then the regulatory authority.

The Environmental Protection Act 1990 and the Contaminated Land (England) Regulations 2000 place responsibilities on Local Authorities (or the Environment Agency) to secure the cleaning up of contaminated land so it is suitable for use and poses no risk to human health and the environment.

If the person/agency responsible for the land fails voluntarily to remediate it, the Local Authority (or Environment Agency in the case of special sites) can serve a *Remediation Notice* requiring the responsible party to undertake remediation. Failure to comply with a Remediation Notice, without reasonable excuse, is a criminal offence. In default of compliance the Local Authority/Environment Agency has the power to carry out the required works and recover the costs from the appropriate persons.

The matter of who is responsible for remediation can be complex – so a Remediation Notice could be served on the owner, the occupier, or the person responsible for the contamination. Generally, the 'polluter pays' principle applies – but not always. If the polluter has gone into receivership or cannot be traced, the Local Authority can demand that the current owner restores the land. That new owner could, for example, be someone who has bought a house built on a site which, it turns out, is contaminated. If the person who is liable does not have the means to pay, the liability may be borne by the Local Authority. Under statutory guidance, costs can be waived or reduced, and regulators must have regard to any hardship that might be caused.

Liability may have to be determined via the courts. For example, responsibility for land which had been found to be contaminated by old gasworks was recently (July 2007) determined in a case brought to the House of Lords, where it was ruled that the successor utility company, which did not own the land in question, would not be held liable. That would leave the current owners responsible – householders on the redeveloped site – but, in the event, the Environment Agency agreed to bear the costs (Evers, 2007).

Developers seeking planning permission for a contaminated site may need to submit a *Preliminary Risk Assessment* (PRA) which sets the basis for planning conditions associated with the granting of planning permission. If contamination is suspected, the planning authority is unlikely to approve an application without a PRA. The PRA needs to set out a viable remedial option and the planning authority needs to be satisfied that the proposed development does not create or allow unacceptable risk from the condition of the land and adjoining land. This requirement has been recently introduced and stems from *Planning Policy Statement 23 (PPS23): Planning and Pollution Control*, which sets out Government advice on land development and impacts on health.

The Government considers that most remediation will take place under the planning regime rather than under the contaminated land regime. It should be noted that, under the planning regime, remediation will be required consistent with the proposed use. That might be to a higher standard than required under the contaminated land regime, which requires remediation to a standard based on current use of the site.

In the past, remediation of contaminated land relied heavily on excavation and disposal ('dig and dump'). But more stringent EU legislation on landfill has made that approach much more costly. In any case, it 'merely moves the problem from one geographic location to another and from the present to future generations'. In-situ treatment is now favoured, and an increasing range of technologies is now available (see English Partnerships, 2006).

Managing liabilities and risks of site acquisition

Purchasers of sites which may be contaminated are advised to seek out good information and advice to assess liabilities, manage risks and negotiate what some lawyers call a 'legal minefield'. *Local Authority searches* should reveal if land is contaminated – certainly if it is on the Contaminated Land Register. However, a negative reply to such a search inquiry may merely mean that the site has not been inspected. It does not necessarily mean it is not contaminated.

Property professionals advise that purchasers should ensure they get all available information from the seller. But it should be noted that sellers may simply say that, as far as they are aware, there is not a problem. Therefore, purchasers should obtain an independent investigation – normally an *environmental search* done by consultants, but Local Authorities are often called on to advise where potential concerns are found. This is not a physical site investigation, but a desk-based collation of material from various sources (e.g. the Environment Agency, CLC, HSE, British Geological Survey, National Radiological Protection Board [now the Radiation Protection Division of HPA] and the Valuation Office Agency). The focus of these inquiries is site history. Such an environmental search is not included in the new Home Information Packs (HIPs).

Purchasers are also advised to take out *insurance* to indemnify against contamination which may subsequently be found; to protect themselves against claims for environmental damage; and to manage risks or cost overruns on remediation activities and risks associated with releases of materials caused by clean-up activities on the site.

Purchasers can also negotiate with the seller for specific payments to take potential liability into consideration. Phased indemnities are another option. Liability can be affected or varied as a result of the terms of the contract between a buyer and seller. The seller can include clauses in a contract ('sold with information' clauses) which achieve relinquishment of liability. From the seller's point of view, when selling land it is important to disclose any information relating to potential or actual contamination in order to shift liability to the buyer.

Clearly, contamination affects the value of a site. But the costs of remediation attract public subsidy. *Contaminated Land Tax Credit* provides developers with tax relief of 150% (offset against Corporation Tax) of total clean up costs – a significant incentive. (In 2007, Government consulted on proposals to extend that to cover long term derelict land, whether contaminated or not – covering costs such as removing existing structures, making good obsolete services, or creating access to a site.)

Local Authorities can make bids to Defra for funding from the *Contaminated Land Capital Projects Programme*, which can meet costs of site investigation and remediation. In 2003, the European Commission approved further assistance for brownfield site development. The Commission allowed Regional Development Agencies, English Partnerships and Local Authorities to provide grants of up to 100% to developers to fund the cost of removing pollution, decontaminating land and tackling dereliction. That is intended to help bring back into use sites which are very expensive to clean up.

The Government 'recognises that the interface between planning and pollution control regimes is complex and developers can be subject to overlapping requirements'. Responding to English Partnerships' recommendations, the Government intends to develop protocols to ensure better collaboration and joint working between planners and pollution control authorities. It is argued that 'a change in the regulatory culture rather than the regulatory framework is needed' (Department for Communities and Local Government, 2008a).

BROWNFIELD AND CONTAMINATED LAND IN THE NORTH EAST

Brownfield land

The 2006 NLUD-PDL survey identifies 3,644.02ha of brownfield land in the North East (Table 1). Thus, the North East has about 7% of the total for England.

Table 1 Categories of brownfield land in the North East, 2006

		Hectares
A	Vacant land	1,317.95
B	Vacant buildings	180.20
C	Derelict land and buildings	981.76
D	Land and buildings in use and allocated in local plan or with planning permission	710.40
E	Land and buildings currently in use with redevelopment potential	453.71
	Total - North East	**3,644.02**
	Total - England	*52,669.85*

Source: NLUD-PDL

Contaminated land

It is difficult to determine how much contaminated land there is – much depends on definitions and proper identification, including risk assessment. In 2002, the Environment Agency quoted an estimate that there may be 100,000 sites affected by contamination to some degree in England and Wales. It advised that between 5% and 20% of these may require action to ensure that unacceptable risks are minimised (Environment Agency, 2002). The Environment Agency's website says that 'No-one knows exactly how much contaminated land there is. We calculate that around 325,000 sites (300,000ha) have had some form of current or previous use that could have led to contamination. We do not expect all these to be contaminated to the point where we need to take action' (Environment Agency, 2008).

As at July 2007, 538 sites in England and Wales had been determined as 'contaminated land' under Part IIA of the Environmental Protection Act 1990. These are sites which have been subject to detailed investigation and found to pose 'unacceptable risks' to health or the environment. Most of these sites are the responsibility of the 353 Local Authorities, but 29 of them are 'special sites' for which the Environment Agency is responsible. For 180 of the 538 sites, appropriate remediation has been secured by the Local Authority (or Environment Agency for special sites) without recourse to a remediation notice. Remediation notices have been served in only a few (5) cases. It should be stressed that the statutory definition (Part IIA) covers land which poses unacceptable risks to human health or the environment, in its present condition and circumstances. Not all land affected by contamination will pose such risks, and the majority of sites will be outside the scope of this regulatory regime, in many cases covered by planning control (DEFRA, 2007).

IDENTIFYING CASE STUDIES OF SITES INVOLVING PUBLIC CONCERN

Analyses of local print and on-line media

The starting point for identifying potential case studies in North East England was a search through the archives of the *Journal* (which covers the northern part of the North East region) and the *Northern Echo* (which covers the southern part). Both of these newspaper archives are available in electronic form (variously: CD Rom accessed in public libraries; internet – containing only a selection of stories; and intranet, available at newspaper offices). The search reviewed the period from 2000 to date. The key words used in the search included 'brownfield', 'contaminated', 'contamination', 'land + reclamation'.

This search generated articles about reclamation schemes, the development of brownfield sites, problems with contaminated land, and remediation, throughout the North East, especially in urban areas and on the former coalfields. Many of these press items were concerned with coal industry (and related) sites and also former industrial sites.

Coal industry sites. These included: colliery sites; pit heaps, including coastal tipping; coke works; and staithes. Several of the reported schemes involved reclamation of the large coastal collieries which closed down in the 1980s. The Government's Coalfields Regeneration Programme supported many of these projects. Examples: Westoe, Vane Tempest, Seaham, Hawthorn and Wearmouth collieries; Lambton, Derwenthaugh, Monkton and Hawthorn coke works; ash tipping from cokeworks; and the 'Turning the Tide' reclamation scheme on the Durham coast.

Former industrial sites. A wide range of sites, most of them previously occupied by heavy industry. Problems particularly with heavy metals and asbestos contamination. Examples: power station sites at Newburn and Dunston on Tyneside; former steelworks sites at North Shore, Stockton and Bessemer Park, Spennymoor; Haverton Hill shipyard; asbestos factory sites (Cape) in Washington and Bowburn; land formerly occupied by engineering plants at Faverdale (West Park, Darlington) and Queen's Park North, Stockton; and open space contaminated by old chemical works at Saltmeadows, Gateshead. Also the former Byker City Farm at the Ouseburn Valley, Newcastle, temporarily closed down owing to lead contamination.

Another substantial category was that of waste dumps of various kinds, including landfill sites:

Waste dumps. The dumping of waste materials at specified sites is generally known about and visible, and can therefore tend to generate public concern. Examples: concerns about old landfill sites at Birtley and Beggar's Wood, Gateshead; remediation of contaminated waste dumps at Paradise Cottage, Witton Park; also resistance to new landfill schemes at Pathhead Quarry, Crawcrook and Houghton Quarry, Houghton-le-Spring. Controversy and problems with disposal of animal carcases during FMD outbreak – especially at Tow Law, Quaking Houses and Widdrington. Also, notable case of contamination caused by Newcastle City Council spreading ash from Byker incinerator on paths, in parks and on allotments.

The press also reported concerns about contaminated silt in docklands areas:

Docklands. On Teesside, large quantities of contaminated silt was scooped out from Middlesbrough Dock as part of site preparation for the Middlehaven development. On Tyneside, toxic waste has recently been dredged from docks and slipway areas along the Tyne and, as part of a trial, dumped offshore in the North Sea.

And a number of stories were about the discovery of contamination on allotments:

Allotment sites. Examples of allotments found to be contaminated as a result of former land uses include: Walker; Spennymoor and West Cornforth.

It should be borne in mind that these examples are cases which received press coverage; they may not be wholly representative. Some were publicised since they were associated with big schemes or important developments or simply because Local Authorities were proactively examining sites which might be contaminated; others were in the media owing to public concern. It should be stressed that just because a site may be covered in a press article does not mean it is contaminated, or 'a problem', or of concern to the public. (Indeed, members of the public may oppose publicity and media coverage in order to protect their interests as home-owners, for example.)

In general, this press material suggested that the most problematic sites, in terms of remediation required and perceived danger, were former coke works and asbestos plants. Sites appear to have largely been treated through methods of on-site containment, typically with a layer of material sealing in the contaminants. Removal of toxic materials off-site seems to have become relatively uncommon and is generally not a favoured solution. These sites had various uses after remediation, including housing, industry and business parks, public open space and recreation. There were some examples of problems with sites which had been reclaimed in the past, and which have been identified as requiring further treatment.

From this selection of sites, it was feasible to draw up a 'long list' of possible case studies. The following are sites which, according to the press coverage, have led to public concern, particularly in terms of perceived health risks:

1. *Seaton Carew – housing.* Estate of 96 homes, built by Wimpey in the late 1970s, found to be contaminated with lead, cadmium, arsenic and zinc. Site formerly used to store pit props, but contamination was thought to be due to the result of dumping of ash from steel works. Householders were worried about health, timescales for remediation, cost, and also the effect upon house prices. Reports in 2005 referred to the difficulties of determining liability and the need to excavate gardens. Following a vigorous local campaign, Defra announced in late

2007 that it would meet the costs (£1.9m) of removing toxic substances from gardens (Tennick, 2007).

2. *Sites of former asbestos plants.* Site of Washington Chemical Co./Cape Insulation. Reclaimed in 1970s but still contaminated. Used as open space. Proposals for developments put forward, but residents voiced concerns about site disturbance and health risks to construction workers and local people.

   An alternative would be a case study of the former Cape site at Bowburn, which has been the subject of several development proposals. Again, concerns have been raised about possible asbestos contamination.

3. *Public open space.* Saltmeadows, Gateshead. This site, alongside the Tyne, is used by local walkers and the Keelman's Way walking/cycling route runs through it. In 2005, the area was found to be contaminated with dioxins, thought to be linked to old chemical works. The site was closed to the public as a precautionary measure. HPA advised that the health risk was small. A clean-up of the site, sealing in the contamination, funded by Defra, was started in 2007 and was expected to take 18 months.

   An alternative would be the former tar works at St Anthony's in the east end of Newcastle, a riverside site identified as contaminated which has required the careful communication of risks to the public.

4. *Contaminated allotments.* There were several possibilities for a case study: Walker, Spennymoor and West Cornforth. This kind of case study would certainly highlight concerns about health risks (principally from eating produce grown on the allotments) and explore how agencies consulted with those affected.

   An alternative would be a study of the dumping of contaminated ash from the Byker reclamation plant, notably by spreading it on to allotment paths in Newcastle. This took place several years ago, so it might be difficult to study through interviews. However, there is considerable documentary material since this was well-publicised; it led on to a court case; and there were vociferous protest groups.

5. *Development sites in Stockton.* If studies are to be undertaken in Stockton, suitable candidates seemed to be Queen's Park North and/or North Shore. Both are former industrial sites with significant contamination issues. The North Shore case would enable exploration of a 'live' example where remediation has recently been undertaken and development is soon to start. Another option would be the

former gas works site at Yarm, a 'special site' on a major aquifer, therefore the responsibility of the Environment Agency.

6. *Darchem site* at Faverdale, Darlington. This former industrial site has been developed over the past few years with housing, a hospital and parks. When development was first mooted (2001-02), there was public concern about possible contamination – some local people said the site was contaminated with asbestos. A case study would examine how those fears were allayed by the developers by, for example, extensive site tests and consultation with concerned local residents.

Information from relevant stakeholders

Discussions with stakeholders confirmed and reinforced the picture developed from reviewing processes and from media reports. But some further points and insights also emerged, including the following:

- Relatively few sites have been identified and recorded as contaminated under Part IIA of the Environmental Protection Act
- Contamination is often not an issue, does not come to the fore, or is not identified unless and until there is a proposal to develop a site. Contaminated sites may, in any case, not present a risk if left undisturbed.
- A developer may maintain that a site is significantly contaminated, that remediation will be costly and therefore that housing development is the only economically viable option. That may be the case (and thus contaminated sites may be used for housing) or may be open to different assessments or interpretations. Competing views may consequently be offered, backed by competing specialist survey assessments.
- There are many smaller scale contaminated sites which may (or may not) pose health risks. A particular problem (not picked up in the media accounts) is former petrol stations, car repair garages and vehicle scrapyards, which may be affected by substantial contamination from old leaking tanks and spillages. Other small-scale sites which can present serious problems include old tanneries, metal working premises, timber yards and tallow works. Some farms have considerable contamination from slurry pits, informal landfill and oil spills. The unregulated demolition of old asbestos garages in residential areas may also pose risks – but attract little or no attention.

One stakeholder pointed to a real dilemma for Local Authorities and others involved in regulation: 'You want to give the public information [about contamination and associated risks] but you wouldn't want to alarm people…'

THE CASE STUDIES

Introduction

On the basis of the trawl through media sources and via stakeholder contacts, three case studies were selected:

- Stockton-on-Tees: an initial consideration of sites and development issues, together with a case study of a contaminated site at Yarm
- Hartlepool and, in particular, Seaton Carew, a contaminated residential site
- Newcastle upon Tyne, focusing on the St Anthony's Tar Works site

Stockton-on-Tees and Yarm

Discussions with Local Authority and regeneration officials suggested that in Stockton there is relatively little local public concern about the development of land which may be contaminated. On Teesside, the public are familiar with derelict and contaminated land – it is 'part of the context of the local area'. It was said that 'people are just glad it gets cleaned up without worrying how it's done'. However, sometimes there are people who 'can't be persuaded' that a site has been completely and safely dealt with. In fact, there was an instance where considerable – and expensive – additional removal of material was undertaken to try to allay the concerns of a vociferous individual, even though that work was considered technically unnecessary.

Several development sites in and around Stockton were discussed, including: Middlehaven (which involved substantial dredging of contaminated silt from the Middlesbrough Dock) and North Shore (some bio-remediation undertaken and consultations on development underway; includes Queen's Campus developments). Also discussed were the railway marshalling yards between Stockton and Middlesbrough which may eventually be developed. This is an extensive site (130 acres) adjacent to the River Tees. Now largely redundant, the area is being considered for development in the longer term, probably for housing – possibly up to 3,000 homes. Challenges include retaining a reduced and rationalised rail infrastructure, highway access and the site conditions. There is thought to be some heavy metals contamination which emanated from the boilers of old steam engines. But it was

stressed that contamination is 'just one of several problems which could be solved' – if a development scheme is to be economically viable.

One particular issue which was raised were the problems stemming from changes to governance structures and arrangements. The demise of the Teesside Development Corporation (in 1998) led to serious subsequent concerns about inadequate information on the nature and condition of certain sites within the former Corporation's designated area.

Stockton Borough Council has been undertaking a programme of site assessments, as required under the Environmental Protection Act 1990 (amended by the Environment Act 1995). Building records and digitised OS maps dating back to the 1850s have been used to identify sites of possible concern which have been occupied by foundries, gasworks and other polluting activities, or been used for landfill. Historic and recent aerial photographs have also been reviewed and data on controlled waters and aquifers etc. have been obtained from the British Geological Survey. Risk assessments have been completed on some 1,900 sites and 400 have been inspected, almost all of which were found to be 'suitable for current use'. Only four sites gave serious cause for concern, including industrial sites and a small residential development at Yarm. This latter site was selected as a case study.

This *former gasworks site in West Street, Yarm* was redeveloped in the 1970s when five terraced houses with gardens were built there. Concerns had been raised at various times and residents themselves reported odours apparently emanating from the ground. Initial tests were conducted in 1989 and revealed oily material a metre below the surface. Following the introduction and implementation of the Environmental Protection Act, more detailed investigations were carried out which identified serious contamination including lead, arsenic and various carcinogenic materials. Because the site sits on a major aquifer, it was identified as a 'Special Site' which is the responsibility of the Environment Agency under Part IIA of the Environmental Protection Act.

The Local Authority's contaminated land officer sought to keep residents fully informed throughout the process of investigations and subsequent remediation. Residents were seen individually several times and an information session was held, which included representatives from the Environment Agency and the HPA. Good practice guidelines for communication, as set out in the 'SNIFFER' handbook (SNIFFER, 1999), were followed (see below). The local press, the *Evening Gazette*, was briefed and responded with a reasonably positive and sympathetic treatment of the issue. Local councillors were also regularly informed about what was happening.

The site required radical treatment, comprising the full removal of up to three metres of material from gardens. The Local Authority made it clear from an early stage that residents were not likely to have to meet the cost and determined that requiring them to do so would be unacceptable under 'hardship' criteria. The Environment Agency thus met the costs, with the possibility of later recouping these from responsible parties. The remediation work was completed in 2005 and the Environment Agency received an award for effective risk communication from the trade journal *Brownfield Briefing*.

Reflecting on this scheme, a Local Authority officer said that 'people in this area are co-operative' and that 'communication is the key'.

Hartlepool and Seaton Carew

Hartlepool Borough Council identified a number of priority sites for inspection, including:

- Former sulphuric acid plant (Leathers Chemicals). This was remediated in the 1980s and is situated adjacent to the Nuclear Power Station; it may attract major industrial development – no proposals at present.
- Former Greenland Creosote Works site, in Cleveland Road – approval has been granted here for 108 apartments. This site had previously been publicised as a danger in the *Hartlepool Mail*'s 'Spot the Grots' campaign.
- Former magnesia works – some contamination; remediation a condition of planning permission. Scheme for 480 housing units recently granted planning permission, and called in for determination by the Secretary of State.
- Seaton Meadows landfill site – there is thought to be contamination on this site, which would render the site unsuitable for construction and final use is therefore likely to be for recreation.
- Victoria Harbour – large scale residential scheme on former port land. Some contamination likely, but not expected to be particularly serious. No planning permission yet.

In addition, there is a particularly interesting (and revealing) example of contaminated land at a residential estate in Seaton Carew, and an outline of that case is presented here.

This serious case of contamination came to light when Council officers were implementing their contaminated land inspection strategy and identified the estate for inspection. The estate consists of 96 houses built by Wimpey in the 1970s. Initial

investigations of areas of open space situated within the estate indicated heavy metals contamination in the soils and that led to detailed ground surveys, conducted in late 2004/early 2005. In the past, the area had been used to store pit props, and it was established that black ash from local steelworks, spread across the site – which had been put down to provide a working surface – was contaminated with arsenic, cadmium, lead and zinc.

From the start, Council officers sought to keep residents informed about their activities, their findings, the consequences and options. Officers convened public meetings, made themselves available to residents, sent letters with written advice, and talked through health issues and timescales. A steering group was set up at an early stage in the process, comprising the Council, the Primary Care Trust, the Health Protection Agency and specialist Environmental Consultants employed by the Council. Seaton Residents Action Group was set up by local residents to represent their interests and facilitate communication and a residents' representative was invited to join the Council's steering group. The Action Group produced regular newsletters to keep people informed.

Council officers say that 'we always found with residents it was best to play it straight and give as much information as possible' and that included advising them that they might be liable for meeting the costs of remediation. They were told that, if it came to it, a charge could be placed against their homes, to be realised when they were sold.

In the event, Defra was able to provide grant funding (Contaminated Land Capital Grant) which will meet the vast majority of the costs for remediation and reinstatement (but there is still discussion with a previous occupant of the land about contributing to the cost). The remediation scheme started in February 2008 and was expected to take 10 months. It involved removing the top 600mm of material from all areas within the property curtilage (apart from beneath houses and paths/driveways), then putting down a sealing layer of geotextile, stone, subsoil, and then new topsoil. The contaminated material was taken off to landfill each day. 3D laser scans, photos, structural and horticultural surveys were carried out, so as to ensure everything was put back as before; each household was issued with a pack of this documentation, in order to avoid subsequent disputes.

The PCT and HPA were involved from an early stage, and the Council in conjunction with the HPA prepared a document for residents, setting out do's and don'ts on health issues and risks.

Local Authority officers worked closely with residents, as did the local Councillor. Officers also liaised with the Council's public relations staff to ensure good communication through letters to residents and press releases. Councillors, well aware of the sensitive nature of the issues involved, are said to have been particularly careful about commenting on the case and talking to the media.

The entire project was a new experience for Council officers and they say it was particularly helpful that the Council appointed an external specialist legal advisor to guide them through the whole Part IIA process. Other Local Authorities in the region have been learning from Hartlepool's experience.

The process has obviously been very difficult for residents and, in particular, has effectively blocked house sales. Apparently, the worst aspect for many residents was the time it took to resolve matters. It was said that, while 'most coped well with the frustration', others found it very difficult to deal with the worry and stress associated not just with the problem of contamination itself, but also with the uncertainty and then the subsequent upheaval during remediation works. Some – perhaps many – residents were said to be sceptical about the health risks and questioned whether the response had been proportionate. They had found it difficult to gauge how harmful the contamination might be and some feel that there really is little risk and that the remediation work is, therefore, 'a waste of money and effort'. Some wanted to apportion blame, but it was difficult to do more than blame past governments, previous regulatory regimes and those who had given planning permission for the development of the estate many years ago. The local press was felt to have been unhelpful in the early stages, running a story on the 'poisoned estate', followed by stories on falling house values etc, but more recently has celebrated the success in securing grant funding for remediation. Some criticised the 'sensationalised headlines' and negative approach of the local press (at least initially). It was also said, however, that the press simply reported what they had been told and that 'we shouldn't blame the media – it's just what they've picked up'.

Council officers say that the main lesson learnt is that it is 'best to be open and honest with residents' and that this has made it possible to 'build up a lot of goodwill with them'. Residents' representatives say that the Council has done a 'pretty good job and the remediation works have gone reasonably well'. They look forward to their area being given 'a clean bill of health' and freed of stigma so things can return to normal and house sales will resume. They hope that the Council will also invest in improvements to the estate once the remediation works are completed, in order to restore the area's image.

Newcastle upon Tyne and St Anthony's

Newcastle City Council has had considerable experience of dealing with contaminated land. There have been well-publicised cases, notably contamination found at Byker City Farm, the site of a former white lead works and investigations which followed from the spreading of incinerator ash to make up allotment paths. Newcastle has five Part IIA sites, more than any other local authority in the North East. The City Council has taken a proactive approach to identifying potential contaminated sites, based on examination of documentary sources, inspection and, where necessary, site investigations involving soil sampling, consideration of bio-accessibility and health risks.

One of the Part IIA sites is the former St Anthony's Tar Works in the east end of Newcastle. The tar works, located on the banks of the River Tyne, distilled coal tar from gas works and coking plants, producing various products including tar for roads. It is understood that spillages were not uncommon, resulting in ground pollution. After the works closed in 1982, the site was bought and cleared by the former Tyne & Wear County Council with a view to making the area a riverside public open space. Surface remediation was undertaken and a tar drain installed. Subsequently, the site passed into the ownership of the City Council which, following the failure of the tar drain, installed pumps to try to deal with tars leaking from the site onto the foreshore. That approach was, however, unsuccessful.

With funding from Defra, consultants Ove Arup were engaged by the City Council in 2005 to undertake investigations. A risk assessment was carried out which determined the site as Part IIA contaminated land. It was recognised that the leakage of chemicals, including benzene and naphthalene, posed a potential risk to people accessing the foreshore and, possibly, also to people using the adjacent riverside path (part of the well-used C2C cycle route and Hadrian's Way footpath). There could be risks from ingestion or dermal contact on the foreshore. Risks via inhalation for those using the path were also considered, but later discounted. It is worth noting that it was already well-known that the area was polluted: the contamination could be seen and odours could be detected at low tide. Apparently that was accepted by local people – to the point where there had been no complaints to the Council about this situation.

A multi-agency Risk Communication Steering Group was formed as an incident control group to identify public health actions, including risk assessment, monitoring and communication about contamination, access issues and health risks. The Group comprised representatives from Newcastle City Council, Ove Arup, the HPA, Newcastle PCT and Newcastle University. It was decided to put up signs warning people to stay away from the foreshore, send letters to local people, GPs, schools,

community centres and local businesses explaining the situation, and issue information to the media. All these communications, including the press release to the media, went out on the same day (21st April 2008) so that local people would get information at the same time as the media.

The City Council's press officer says that it was particularly important that the technical experts recognised the need for good media relations, in order to 'communicate a complex and potentially reputation-damaging incident … by being proactive, open and up front' (Mapplebeck, 2008). Reflecting on the coverage, he considers that the treatment in the media was 'on the whole, positive and accurate and reflected the possible health risks well'. Apparently the public have not been unduly alarmed and have not expressed concerns to the Council. Officials feel that the incident has been managed well and are relieved that there was not a repetition of the adverse publicity generated when the City Farm contamination became known and, especially, when the incinerator ash story was revealed.

Although St Anthony's is a riverside location it is not defined as a 'special site' falling within the remit of the Environment Agency. The City Council, owners of the site, retain responsibility and are required to deal with it. The City Council is looking at options for remediation and is seeking funding from Defra to do that assessment.

RESPONDING TO PUBLIC CONCERN: GOOD PRACTICE

NICOLE Guidelines

NICOLE is the main Europe-wide network for 'the stimulation, dissemination and exchange of knowledge about all aspects of industrially contaminated land'. Its study of *Communication on Contaminated Land* (NICOLE, 2006) is particularly relevant. It looks at relationships between companies responsible for the management and remediation of contaminated sites and local stakeholders, especially local residents. The report presents brief case studies which are used to identify and highlight good practice in communication and consultation.

The report notes (p3) that it is 'a challenge for companies to communicate contaminated land issues to their stakeholders and to effectively communicate the possible options … [and the] necessary actions or measures to be taken. Experience shows that effective communication can lead to a better quality of solution for all parties concerned and to its wider acceptance'. The report sets out basic principles

and many practical examples of effective communication which addresses public concerns and fears. These include:

- Open and honest communication – from the start – helps to re-assure residents. Openness builds trust. All parties should get the same information at the same time.
- The quality of the relationship is crucial. Ideally, relationships between a company and local residents should have been built up over time, so there is already trust if and when a contamination issue arises. The company should take seriously people and their concerns – and not patronise them.
- Companies must be seen to be serious and fully engaged with the problem; for example having senior people taking responsibility and showing that they will act.
- Ensure that the community feels they are involved in finding solutions. Encourage feedback. It is not acceptable, nor effective, to simply leave it to the 'experts' to do what is best. This can involve not only agreeing solutions but also ongoing monitoring programmes with residents participating.
- Open up opportunities for dialogue, for example:
    - Enabling residents to talk to the experts and other stakeholders
    - Regular update meetings
    - Site visits
    - Provision of Freephone 24-hour helpline
    - Development of an Internet information and advice site
- Companies are urged to develop a communications strategy, with carefully planned communications in plain language. It is important to ensure that people get information first hand, not from the media or from another third party source. Don't let the media take control of the situation.
- Resolve the situation as quickly as possible – initiate investigation as soon as a problem of contamination arises; then aim to implement remedies as soon as practicable.
- Initiate practical solutions to support communities. One of the cited case studies (ICI, Runcorn, UK) had the company offering to buy people's houses if they wished to move from an estate where the housing market was being blighted by concerns about contamination.
- Be reliable: companies should say what they are going to do and do what they say.

- Take public perceptions seriously. Health risks of living near a contaminated site may be judged by experts to be small. But the public can perceive the risks as much greater. Those public perceptions need to be addressed and may require action to deal with them – action which, from a technical perspective, may not seem to be justified.

The NICOLE report is evidently not only of relevance to the behaviour of companies but also to public bodies and their response to contamination issues and associated concerns about health risks.

The 'SNIFFER' handbook

The Scotland and Northern Ireland Forum For Environmental Research (SNIFFER) has produced a best practice handbook for practitioners, *Communicating Understanding of Contaminated Land Risks*. This is a useful and accessible step-by-step guide to risk communication and the development of relationships with stakeholders. The handbook was published in 1999 and a new updated edition, aimed at a wider audience, is to be published in 2009.

This guide goes over much the same ground as the NICOLE report, but in more detail and from the perspective of a contaminated land officer in the UK. It stresses the need to take public perceptions seriously and to communicate fully and clearly, promoting two-way communication. It is noted that:

> *Lay people sometimes lack certain information about hazards. However, their basic conceptualisation of risk is much richer than that of the experts and reflects legitimate concerns that are typically omitted from expert risk assessments. As a result, risk communication and risk management efforts are destined to fail unless they are structured in a two-way process. Each side, expert and public, has something valid to contribute. Each side must respect the insights and intelligence of the other.*
>
> Slovic (1987), quoted in SNIFFER (1999, p10)

The guide discusses the importance of thinking through how actions may be interpreted. For example, the public might regard site assessment as an attempt by officials to find excuses not to remediate. Another example given is that 'site investigations that require individuals to wear protective clothing may cause alarm to residents'.

It is pointed out that different individuals and groups will perceive risks differently. Moreover, risks are difficult to assess and to explain, and there will be associated assumptions, value judgements and uncertainties. Indeed, this came across strongly in

our case study interviews, where professionals noted the problem of measuring risk, finding a language to communicate issues of risk, and balancing an assessment that there may be a risk against the consequent anxiety and stress experienced by individuals. And it is hard to clarify distinctions between 'safe', 'safe enough' and 'unacceptably risky'.

The SNIFFER guide sets out four steps or questions:

- *When to communicate?* Engage in early dialogue with the public to establish credibility and encourage stakeholders to buy-in to the assessment process. Avoid stakeholders feeling that communication is 'just a PR exercise' and thinking that it is all a 'fait accompli that they cannot influence'.
- *Who to communicate with?* Carefully identify all potential stakeholders. Bear in mind the need to communicate with the 'hard-to-reach'; they could well be the people most at risk from the hazards posed by the site.
- *What to communicate?* Be 'open, accessible, listening and responsive'. Avoid making comparisons with other kinds of risks. Explain technical terms, assumptions and uncertainties. Never assume information is 'too difficult' or 'too specialist' – with careful explanation, people can understand data and assessment.
- *How to communicate?* Invite feedback; recognise limitations of knowledge; acknowledge that people's concerns are legitimate. The guide reviews the advantages and limitations of different approaches to communication, including focus groups, surveys, open days, coffee morning meetings, briefings, websites, a hotline, workshops, citizens' juries, advisory committees and facilitated dialogue. It also considers ways of handling the media.

Dialogue, trust and openness are stressed throughout as key components in effective risk communication.

CONCLUSIONS

This study generally fulfilled the original aims and objectives. It looked at the identification, regulation and remediation of contaminated sites and communication of risk, drawing particularly on case studies in North East England. As a relatively small-scale scoping study, the issues were not explored in great detail. The study did, however, outline the current situation and reviewed key elements of practice in risk communication.

It is evident that efforts are being made in the North East to communicate information about contamination risks sensitively and effectively. The case studies provide examples of good practice. In addition, both the NICOLE network and the SNIFFER forum have developed useful guidelines, setting out practical approaches to communicating with local people and other stakeholders.

Looking ahead to the further development of this research, there does not seem to be a need to undertake work on *generic* guidelines. That has largely been done and further work is currently underway, notably through the revision and updating of the SNIFFER handbook. But there are certainly issues which do require further investigation and which could be developed into a research agenda. For example:

- Research exploring which approaches to communication work best in particular situations and circumstances. And, also, consideration of what constitutes 'effective' or 'successful' communication.
- Research on the best ways of framing and explaining ideas about risk and uncertainty in relation to contaminated land. Practitioners and the public appear to experience considerable difficulty in finding ways of understanding these issues and finding suitable forms of measurement, concepts and language.

It would be valuable both to deepen and to broaden the research by, for example:

- Detailed investigation of a case study on an ongoing basis, as the 'story' develops and unfolds. That should enable the researcher, possibly in the role of 'critical friend', to look in depth at how information is communicated – methods and content - and how it is received
- On the other hand, the research could be broadened to cover many more case studies, and a much greater variety of cases, than has been possible in this scoping study. The aim would be to 'gather in' experiences and clarify what works best in particular situations and circumstances. The aim would be to go beyond the listing of options set out by NICOLE and SNIFFER, and work towards much more specific guidance on which tools to use from the 'toolkit' of approaches and methods.

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APPENDIX - INDIVIDUALS CONSULTED

Vivienne Air	Contaminated Land Officer, Newcastle City Council
David Bage	Planning Dept., Stockton Borough Council
Jamie Bond	Environmental Scientist, Health Protection Agency
Jane Elliott	Planning Dept., Stockton Borough Council
Sue Goodman	Technical Specialist , Environment Agency
Jane Hall	Planning Dept., Stockton Borough Council
Dennis Hancock	Senior Engineer, Hartlepool Borough Council
Phil Hartley	Team Manager, Land Contamination, Newcastle City Council
Karen Johnson	Lecturer in Environmental Engineering, Durham University
Chloe Light	Contaminated Land Officer, Newcastle City Council
Karen Lloyd	Regional Communications Manager, Health Protection Agency,
Dr Fu-Meng Khaw	Consultant in Health Protection, Health Protection Agency,
Margaret Mills	Seaton Residents Action Group, Seaton Carew, Hartlepool
Richard Poundford	Head of Regen. & Econ. Development, Stockton Borough Council
Les Southerton	Chief Executive, Middlesbrough Town Centre Company

David Thornborrow	Chief Planning Officer, Durham City Council
Cllr Michael Turner	Councillor, Hartlepool Borough Council
Lee Tweddell	Environmental Health Unit, Stockton Borough Council
Richard Waldmeyer	Planning Dept., Hartlepool Borough Council

We also attended a workshop session held in Edinburgh by the Scotland & Northern Ireland Forum for Environmental Research (SNIFFER), a Royal Institution of Chartered Surveyors' (North East Region) Seminar on Brownfield Land and a site visit at Seaton Carew, Hartlepool, arranged by the Contaminated Land Officers Group in the North East (CLANNERS).